OPERA TIONS SUPPORT

SYSTEM RELIABILITY PLANNING

System Reliability Planning prepares plans to improve system reliability. This includes determining the most cost effective capital replacement programs, as well as maintenance programs for each asset type through a “Reliability Centered Maintenance” approach. Distribution feeder plans are optimized considering:

- new loads;
- asset condition;
- cost effective routing;
- system reliability; and
- automation opportunities.

System studies, such as the ACA, pinpoint key areas where future asset investment is required. Grid expansion projects are also identified through the analysis of system feeder loads.

ACTIVITIES

System Reliability Planning involves three main functions described below.

Feeder Reliability

Feeder Reliability incorporates the following activities:

- Review feeder loading and pinpoint performance gaps
- After considering all alternatives, prepare feeder rearrangements as required to accommodate new customer loads
- Address customer concerns regarding system and/or feeder performance by investigating the cause of the concern and, as necessary, increasing maintenance inspections or generating capital projects to address the issue
• Work in collaboration with the City of Toronto, Hydro One, and the TTC; to generate and co-ordinate work on specific projects including addressing any conflicts so as to reduce cost and increase efficiency

• Identify demand capital projects to improve THESL system performance and address issues, such as reliability, safety, and compliance with regulatory and environmental requirements

• Prepare capital project plans and scope packages by validating system records, developing high level estimates, performing risk analyses, conducting site visits, and producing a detailed description of the work required

• After reviewing all alternatives, complete scope packages and issue them for design and construction

• Create the annual THESL capital budget, based on prioritizing financial, plant modernization, safety, workforce development and reliability considerations

• Continue refining the ten-year plan, to ensure system performance is maintained and improved

**Component Reliability**

Component Reliability incorporates the following activities:

• Develop annual maintenance programs, and prepare THESL’s annual Plant Maintenance Manual

• Prepare annual budget for all maintenance projects, to ensure system performance is maintained and improved

• Review asset inspection data using RCM analysis to determine health and age profile of equipment to optimize inspection schedules

• Recommend program adjustments to optimize maintenance programs

• Perform reliability studies to improve SAIDI and SAIFI using THESL’s Interruption Tracking Information System (“ITIS”) and equipment failure analysis reports
• Use data in the Ellipse asset registry to optimize inspection schedules by
generating Maintenance Schedule Tasks (“MST”) for each individual major asset
in Ellipse. Ellipse is THESL’s Enterprise Asset Management (“EAM”) system
used as a central data source, to schedule projects and to manage material
inventories. MSTs will generate the Work Orders for the crews that execute the
work. Inspection results including failures or deficiency information gathered
from the field are entered back into Ellipse against the particular equipment. This
information can then be used for future trending or failure analysis
• Award contracts and prepare specifications for contract work

System Expansion

System Expansion incorporates the following activities:
• Analyze system reconfigurations to accommodate customer requests for new load
  and to optimize utilization of system assets
• Optimize system feeder loading performance through feeder load forecasting and
  transfers
• Prepare the feeder master plan, to accommodate future growth in a cost-effective
  manner, while optimizing system capacity, and considering automation
  opportunities
• Establish planning guidelines such as cable sizes and feeder routing, to ensure
  consistency of design and optimum system performance, and to achieve cost
  effective implementation
• Forecast feeder loads, to pinpoint future improvement opportunities, through the
  use of spreadsheets and automated tools such as the PI Process Book and Network
  Grid Calc Programs
• Work with customers to address Power Quality performance issues
• Perform engineering studies to identify assets requiring modernization
• Review new technologies to enhance system performance in a cost-effective manner

SYSTEM RELIABILITY PLANNING COSTS
While System Reliability Planning staffing and its associated costs remain relatively flat throughout the test years, the work program continues to grow year-over-year. Consequently, a greater amount of work in planning and developing reliability improvement projects will be undertaken by each staff member each year. This higher throughput represents an efficiency gain expected in each year.

Table 1: System Reliability Planning Costs ($ Millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>2006 Historical**</th>
<th>2007 Bridge</th>
<th>2008 Test</th>
<th>2009 Test</th>
<th>2010 Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs</td>
<td>5.52</td>
<td>2.53</td>
<td>1.68</td>
<td>1.72</td>
<td>1.74</td>
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**The 2006 actual spending was based on the former organization

The actual 2006 costs shown are for the former Investment Planning Department and the Asset Data Management Departments that were restructured in January 2007. The re-organization more closely aligned Asset Management departments with the objectives of improving system reliability, modernizing the assets and improving customer focus.

The decrease in costs from 2006 to 2007 is attributable to the transfer of only a portion of the staff from the former Investment Planning Department to System Reliability Planning. The remaining staff were deployed to other areas.

The decrease from 2007 bridge year to the 2008 test year is due to an increased allocation engineering costs from operating expense to capital expenditures and a reduction in contract charges in 2008. Net operating costs then remain relatively flat for the remainder of the test years.